TCD-2100

1-channel H.264 Video Encoder

Hardware Manual

(DC 12V)

Ver. 2013/07/02

ACTi
Connecting Vision

Table of Contents

Precautions 3

Safety Instructions **4**

Introduction 6

Package Contents **6**
Physical Description **7**
Basic Connections **10**
Serial Port Connection 11

Accessing the Device 13

Configure the IP Address **13**
Access the Device **17**

Precautions

Read these instructions

You should read all the safety and operating instructions before using this product.

Heed all warnings

You must adhere to all the warnings on the product and in the instruction manual. Failure to follow the safety instruction given may directly endanger people, cause damage to the system or to other equipment.

Servicing

Do not attempt to service this video device yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Trademarks

All names used in this manual are probably registered trademarks of respective companies.

Liability

Every reasonable care has been taken during the writing of this manual. Please inform your local office if you find any inaccuracies or omissions. We cannot be held responsible for any typographical or technical errors and reserve the right to make changes to the product and manuals without prior notice.

FCC/CE Regulation

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the users will be required to correct the interference at their own expense.

Safety Instructions

Don’t use the power supply with other voltages

If you use a power supply with different voltage than the one included with this device, this device may be damaged or inflict damage upon other equipments / personnel. All warranty of this product will be voided in the situations above.

Don’t open the housing of the product

Cleaning

Disconnect this video product from the power supply before cleaning.

Attachments

Do not use attachments not recommended by the video product manufacturer as they may cause hazards.

Water and Moisture

Do not use this video product near water, for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool and the like.

Don’t use accessories not recommended by the manufacturer

Only install this device and the power supply in a dry place protected from weather

Servicing

Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring service

Disconnect this video product from the power supply immediately and refer servicing to qualified service personnel under the following conditions.

1) When the power-supply cord or plug is damaged
2) If liquid has been spilled, or objects have fallen into the video product.
3) If the video product has been directly exposed to rain or water.

4) If the video product does not operate normally by following the operating Instructions in this manual. Adjust only those controls that are covered by the instruction manual, as an improper adjustment of other controls may result in damage, and will often require extensive work by a qualified technician to restore the video product to its normal operation.

Safety Check

Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine if the video product is in proper operating condition.

Introduction

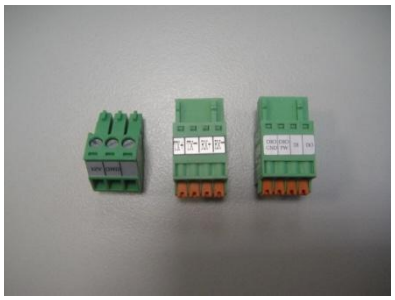
Package Contents

TCD-2100

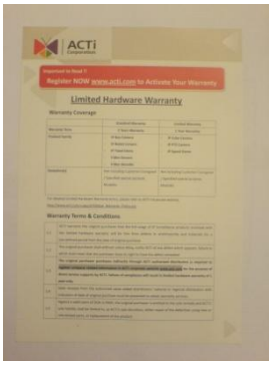
Power Adaptor (Optional)

Mounting Screws

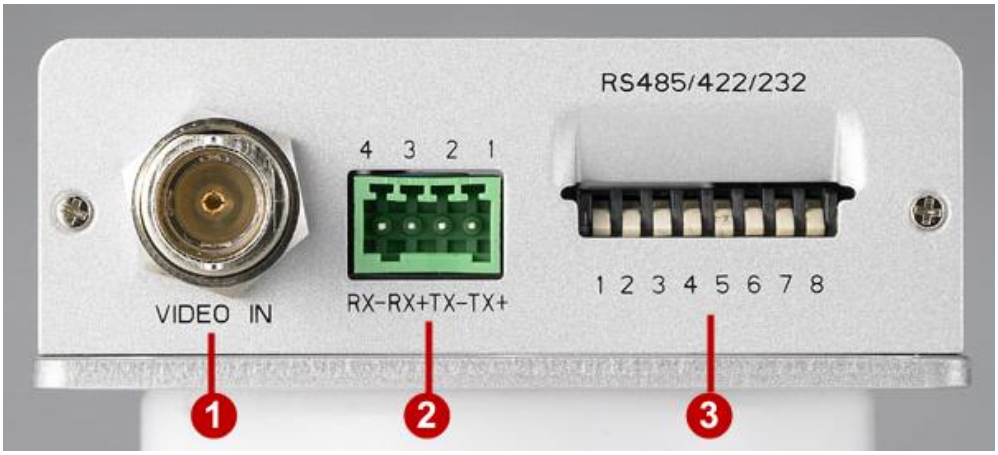
Terminal Blocks (Power, Serial, DI/O)



Warranty Card



Physical Description



1) Video Input

Connect an analog camera using BNC connector.

2) Serial Port Connection via Terminal Block

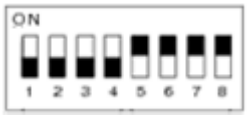
Connect a serial port device to the supplied terminal block. See ***Serial Port Connection*** on page 11 for connection details.

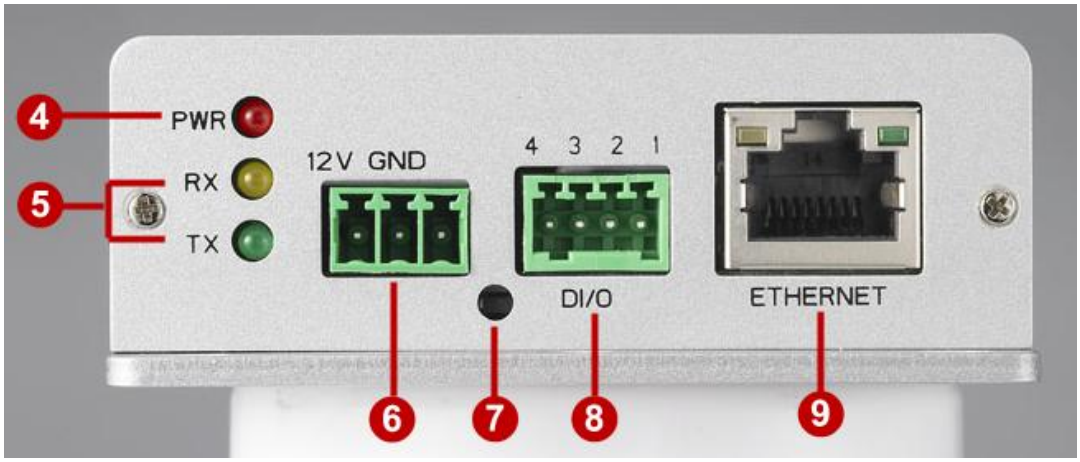
3) DIP Switch for Serial Port Configuration

The same terminal connections can be used for different protocols. Select which protocol to use via this DIP Switch.

RS-485 or RS-422 (Default is RS-485)

RS-232 pin define





4) Power LED

The LED will light up after device has successfully completed the boot process

5) Serial Port LED

LED will light up when serial port is active

6) Power Input

Connect the power adaptor here if your power input is DC12V.

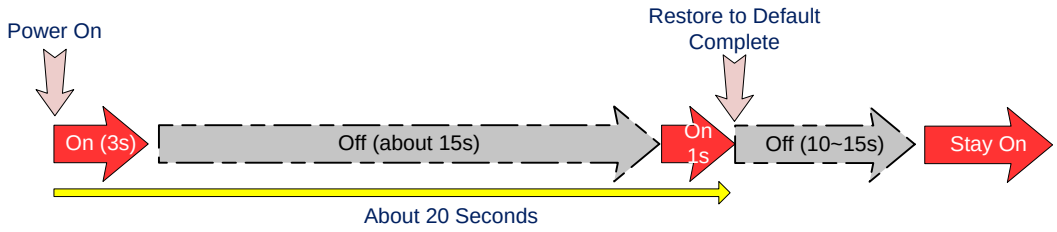
PIN	NAME	DESCRIPTION
1	12V	DC Power Input
2	GND	Ground Pin

7) Reset Button

Step 1: Switch off IP device by disconnecting the power cable

Step 2: Press and continue to hold the Reset Button (with a sharp tipped object, like a pen.)

Step 3: ***Reconnect the power cable while continuing to hold the reset button.*** The red Power LED light will flash on for 3 second first, turn off for about 15 seconds, flash on for another second and turn off again. By this time the reset to default operation is already completed. ***This will take around 20 seconds from power up.*** You may then release the reset button. This length of time fluctuates slightly with the environment. The Power LED light will come back on and stay on after a few more seconds. The unit will start up with factory default settings automatically.



8) Terminal Blocks for Digital Input / Output

The IP device supports one alarm input and one transistor output. Please connect DI with Pin 1 and 3 and connect DO with Pin 2 and 4.

PIN	NAME
1	GND
2	DC + 12V
3	Digital Input
4	Transistor Output

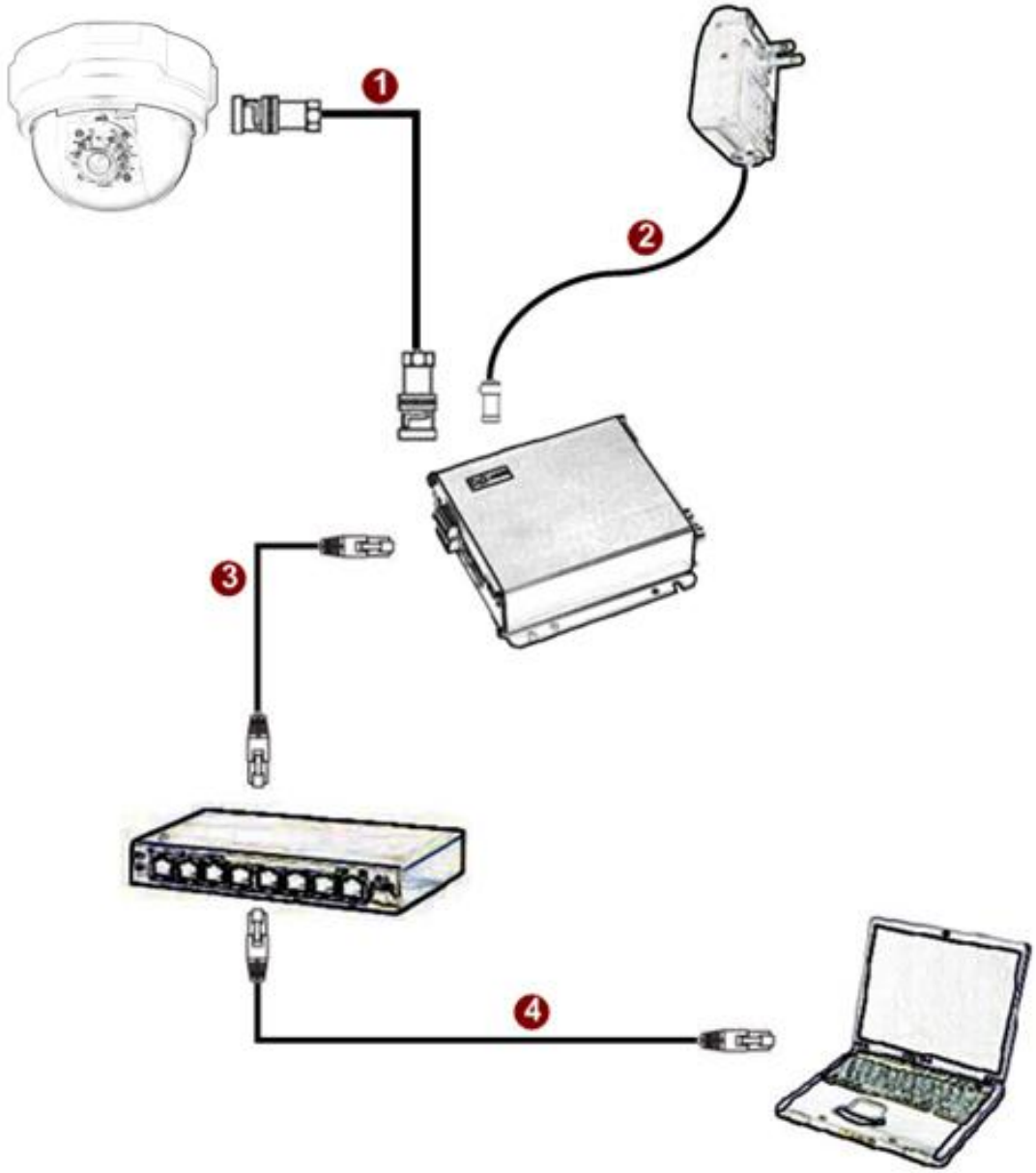
DI	Connection design		TTL-compatible logic levels
	Voltage	To trigger (low)	Logic level 0: **0V ~ 0.4V**
		Normal (high)	Logic level 1: **3.1V ~ 30V**
	Current		**10mA ~ 100mA**
DO	Connection design		Transistor (Open Drain)
	Voltage & Current		Internally powered at 12 V. Limit to no more than 24V DC if connected to external power, <100mA

9) Ethernet Port

The IP device connects to the Ethernet via a standard RJ45 connector. Supporting NWAY, this IP device can auto detect the speed of local network segment (10Base-T/100Base-TX Ethernet).

Basic Connections

Follow the procedures below to connect the IP device to the respective apparatuses.



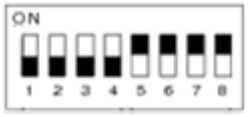
1) Connect an analog camera to the IP device video in (BNC connector).
2) Connect the power adaptor to the IP device.
3) Connect IP device Ethernet port to the Network switch (via RJ45 connectors).
4) Connect a PC to the Network switch (via RJ45 connectors).

Serial Port Connection

If the analog camera supports functions like pan-tilt, zoom, etc., use the serial port to connect the cables/pins of the analog camera to the IP device and use either RS-485, RS-422, or RS-232 to control these functions.

Check the connection protocol available on the analog camera and connect it to the IP device following the procedures below.

1. Set the DIP switch to select the communication protocol to use.

RS-485 / RS-422 (Default)	RS-232
	

2. Map the wires from the analog camera to the IP device using the supplied terminal block according to the corresponding protocol table below:

Via RS-485 Connection

Terminal Block		Wire Mapping	
Pin Number / Label		IP Device Pin	Camera Pin
1	TX +	TX +	TX +
2	TX -	TX -	TX -
3	RX+	-	
4	Rx-	-	

Via RS-422 Connection

Terminal Block		Wire Mapping	
Pin Number / Label		IP Device Pin	Camera Pin
1	TX +	TX +	RX +
2	TX -	TX -	RX -
3	RX+	RX +	TX +
4	Rx-	RX -	TX -

Via RS-232 Connection

Terminal Block		Wire Mapping	
Pin Number / Label		IP Device Pin	Camera Pin
1	TX +	TX +	RX
2	TX -		
3	RX+	RX +	TX
4	Rx-		

NOTE: The pins/cables of the analog camera may be labeled differently depending on the location or country where the camera is purchased. For example, some devices may have **TX -** pin labeled as "A" or "485 -", etc. Refer to the camera documentation or contact the manufacturer to verify the corresponding pin labels and ensure proper wiring connection.

CAUTION: Incorrect wiring may cause damage to the connected devices.

DISCLAIMER: ACTi will not be responsible for any damage caused by improper wiring.

3. Connect a ground wire to one of the GND terminal pins of the IP device (via Power or DI/P terminals) to complete the connection.

Accessing the Device

Configure the IP Address

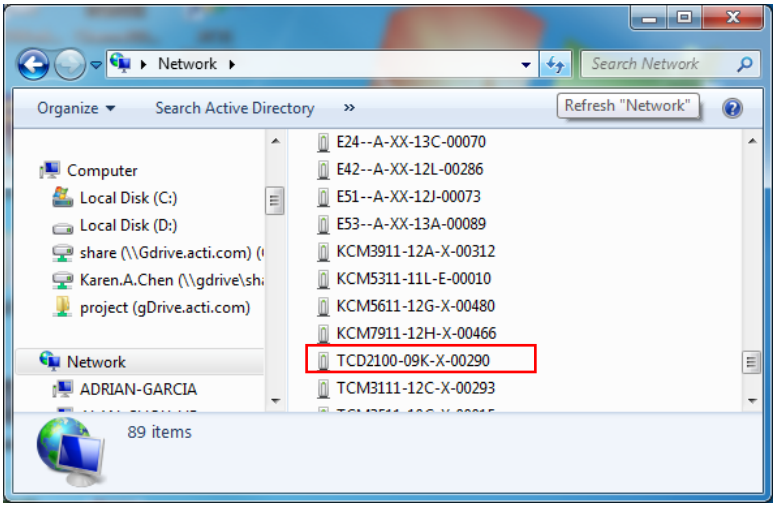
In order to be able to communicate with the device from your PC, both the device and the PC have to be within the same network segment. In most cases, it means that they both should have very similar IP addresses, where only the last number of the IP address is different from each other. There are 2 different approaches to IP Address management in Local Area Networks – by DHCP Server or Manually.

Using DHCP server to assign IP address

If you have connected the computer and the device into the network that has a DHCP server running, then you do not need to configure the IP addresses at all – both the device and the PC would request a unique IP address from the DHCP server automatically. In such case, the device will immediately be ready for the access from the PC. The user, however, might not know the IP address of the device yet. It is necessary to know the IP address of the device in order to access it using a Web browser.

The quickest way to discover the devices in the network is to use the simplest network search, built in the Windows system – just by pressing the “Network” icon, all the devices of the local area network will be discovered by Windows, thanks to the UPnP function support of our devices.

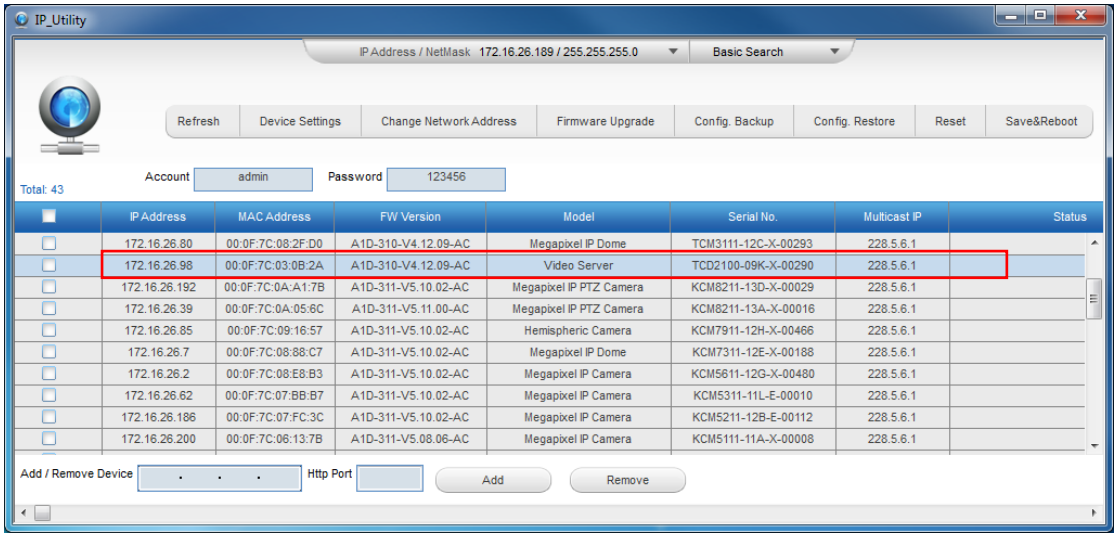
In the example below, the device that has just been connected to the network is successfully found.



When the left mouse is clicked on the device model name, the default browser of the PC is automatically launched and the IP address of the target device is already filled in the address bar of the browser.

If you work with our devices regularly, then **there is even a better way to discover the devices in the network** – by using **IP Utility**. The IP Utility is a light software tool that can not only discover the devices, but also list lots of valuable information, such as IP and MAC addresses, serial numbers, firmware versions, etc, and allows quick configuration of multiple devices at the same time.

The IP Utility can be downloaded for free from the website.
When you launch IP Utility, the list of connected devices in the network will be shown. See sample illustration below:


IP_Utility
IP Address / NetMask 172.16.26.189 / 255.255.255.0
Basic Search
Refresh
Device Settings
Change Network Address
Firmware Upgrade
Config. Backup
Config. Restore
Reset
Save&Reboot
Account admin
Password 123456
Total: 43
IP Address | MAC Address | FW Version | Model | Serial No. | Multicast IP | Status
172.16.26.80 | 00:0F:7C:08:2F:D0 | A1D-310-V4.12.09-AC | Megapixel IP Dome | TCM3111-12C-X-00293 | 228.5.6.1
172.16.26.98 | 00:0F:7C:03:0B:2A | A1D-310-V4.12.09-AC | Video Server | TCD2100-09K-X-00290 | 228.5.6.1
172.16.26.192 | 00:0F:7C:0A:A1:7B | A1D-311-V5.10.02-AC | Megapixel IP PTZ Camera | KCM8211-13D-X-00029 | 228.5.6.1
172.16.26.39 | 00:0F:7C:0A:05:6C | A1D-311-V5.11.00-AC | Megapixel IP PTZ Camera | KCM8211-13A-X-00016 | 228.5.6.1
172.16.26.85 | 00:0F:7C:09:16:57 | A1D-311-V5.10.02-AC | Hemispheric Camera | KCM7911-12H-X-00466 | 228.5.6.1
172.16.26.7 | 00:0F:7C:08:88:C7 | A1D-311-V5.10.02-AC | Megapixel IP Dome | KCM7311-12E-X-00188 | 228.5.6.1
172.16.26.2 | 00:0F:7C:08:E8:B3 | A1D-311-V5.10.02-AC | Megapixel IP Camera | KCM5611-12G-X-00480 | 228.5.6.1
172.16.26.62 | 00:0F:7C:07:BB:B7 | A1D-311-V5.10.02-AC | Megapixel IP Camera | KCM5311-11L-E-00010 | 228.5.6.1
172.16.26.186 | 00:0F:7C:07:FC:3C | A1D-311-V5.10.02-AC | Megapixel IP Camera | KCM5211-12B-E-00112 | 228.5.6.1
172.16.26.200 | 00:0F:7C:06:13:7B | A1D-311-V5.08.06-AC | Megapixel IP Camera | KCM5111-11A-X-00008 | 228.5.6.1
Add / Remove Device
Http Port
Add
Remove

You can quickly notice the device model in the list. Click on the IP address to automatically launch the default browser of the PC with the IP address of the target device already filled in the address bar of the browser.

Use the default IP address of the device

If there is no DHCP server in the given network, the user may have to manually assign the IP addresses to both the PC and the device to make sure they are in the same network segment.

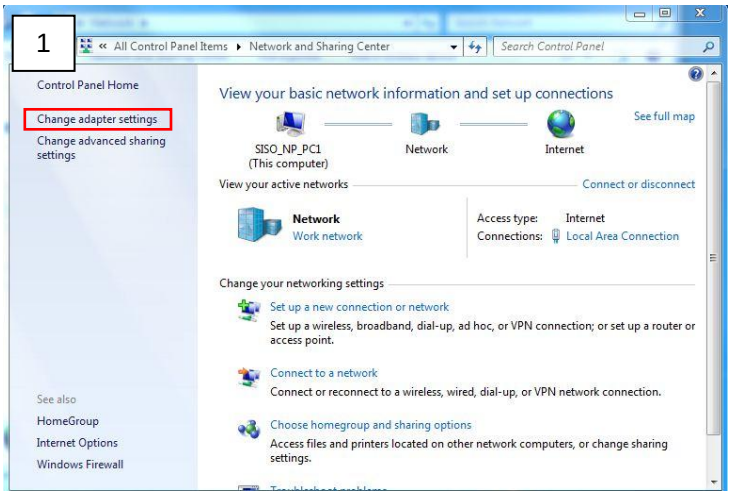
When the device is plugged into the network and it does not detect any DHCP services, it will automatically assign itself a default IP:

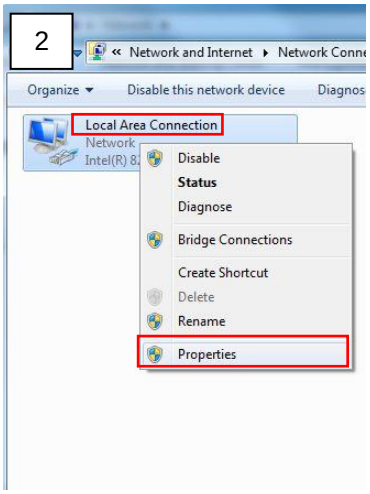
192.168.0.100

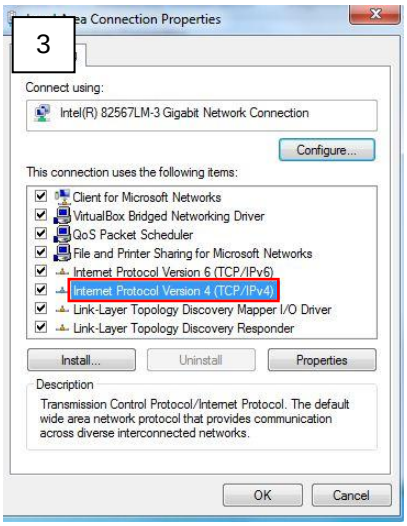
Whereas the default port number would be **80**. In order to access that device, the IP address of the PC has to be configured to match the network segment of the device.

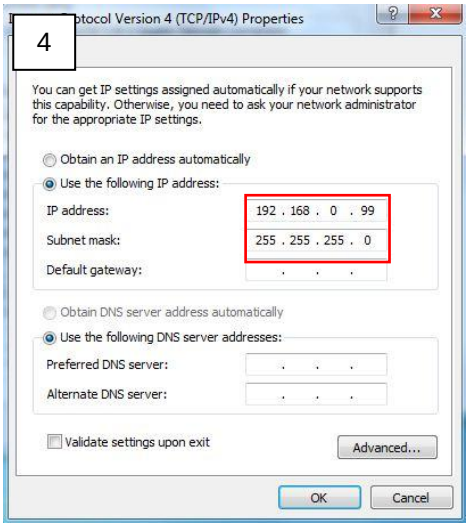
Manually adjust the IP address of the PC

In the following example, based on Windows 7, we will configure the IP address to **192.168.0.99** and set Subnet Mask to **255.255.255.0** by using the steps below:


1
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
SISO_NP_PC1 (This computer)
Network
Internet
View your active networks
Connect or disconnect
Network
Work network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
See also
HomeGroup
Internet Options
Windows Firewall

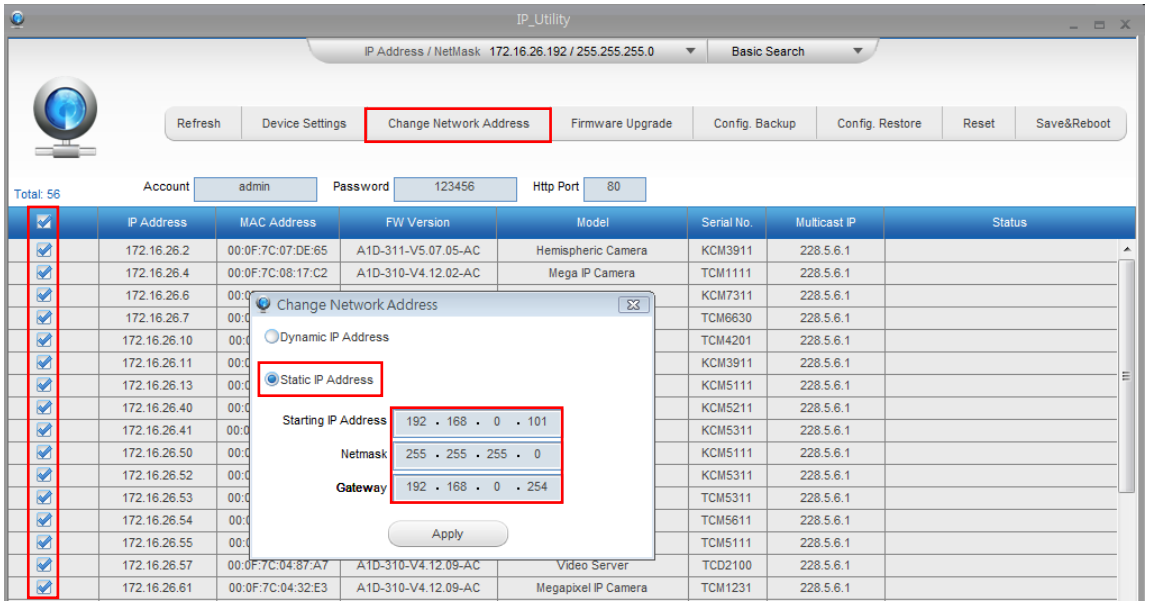





4
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 99
Subnet mask: 255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

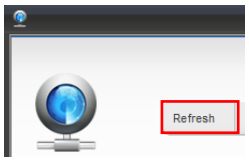
Manually adjust the IP addresses of multiple devices

If there are more than one device to be used in the same local area network and there is no DHCP server to assign unique IP addresses to each of them, all of the devices would then have the initial IP address of **192.168.0.100**, which is not a proper situation for network devices – all the IP addresses have to be different from each other. The easiest way to assign devices the IP addresses is by using **IP Utility**:



With the procedure shown above, all the devices will have unique IP addresses, starting from 192.168.0.101. In case there are 20 devices selected, the last one of the devices would have the IP 192.168.0.120.

Later, by pressing the “Refresh” button of the IP Utility, you will be able to see the list of devices with their new IP addresses.



Please note that it is also possible to change the IP addresses manually by using the Web browser. In such case, please plug in only one device at a time, and change its IP address by using the Web browser before plugging in the next one. This way, the Web browser will not be confused about two devices having the same IP address at the same time.

Access the Device

Now that the device and the PC both have their unique IP addresses and are under the same network segment, you can use **Microsoft Internet Explorer** on the PC to access the device.

Note: Only Microsoft Internet Explorer is supported by the device at the time of writing this documentation. Please refer to our website for future upgrades.

Internet Explorer supports the following functionalities:

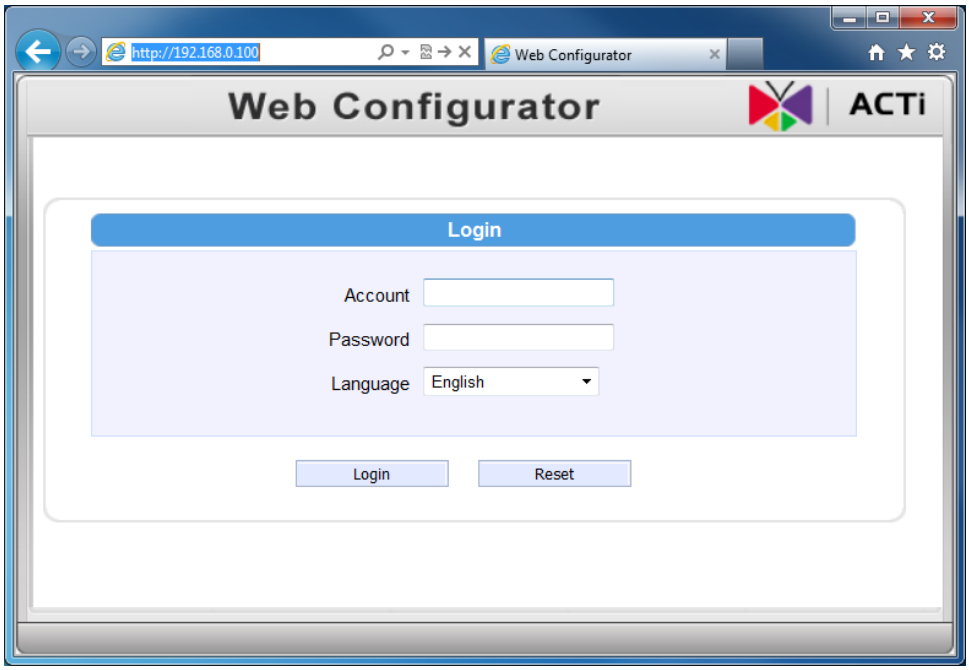
Functionality	Internet Explorer
Live Video	Yes
Live Video Area Resizable	Yes
Capture the snapshot	Yes
Video overlay based configuration (Motion Detection regions, Privacy Mask regions)	Yes
All the other configurations	Yes

The ActiveX control for video stream management will be downloaded from the device directly – the user has to accept the use of such control when prompted so. No other third party utilities are required to be installed in such case.

Assuming that the device's IP address is **192.168.0.100**, you can access it by opening the Web browser and typing the following address into the Web browser's address bar:

http://192.168.0.100

Upon successful connection to the device, the user interface called **Web Configurator** would appear together with the login page. The HTTP port number was not added behind the IP address since the default HTTP port of the device is 80, which can be omitted from the address for convenience.



Before logging in, you need to know the factory default Account and Password of the camera.

Account: **Admin**

Password: **123456**

For further operations, please refer to the **Firmware User Manual**.